ANALYSIS OF THE RELATIONSHIP BETWEEN ICT AND AVAILABILITY / PRODUCTIVITY OF CONTAINER HANDLING EQUIPMENT IN THE PORT OF COLOMBO

By

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DECLARATION

I certify that this dissertation does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any University and to the best of my knowledge and belief it does not contain any material previously published, written or orally communicated by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loan, and for the title and summary to be made available to outside organizations.

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E.G.S.D. De Silva

Date: 28th December 2006

I certify that the above particulars are true and correct to the best of my knowledge.

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ABSTRACT

In the Port of Colombo 65% of the container business depends on transshipment. As such it is very important to understand the key factors that promote customer satisfaction and productivity, because unsatisfied customers may change their operational base for transshipment to other more attractive ports or terminals in the region following the recent developments in the ports in the Indian subcontinent.

The completion of operations for a container vessel within a planned period is one of the prime requirements that the customer expects from the terminal operators, which otherwise will cost them heavy expenditure. Two main reasons for the failure to achieve the above objective are the non-availability of container handling cranes, which may occur suddenly in the midst of operations, and low productivity resulting from various other causes such as breakdowns or faults, accidents, planning problems, weather conditions and so on. In this scenario, ICT systems used in container-handling equipment play a major role, since ICT systems installed in the crane will help to solve many of the problems mentioned above.

In this research the main objectives are to find out the relationship between the ICT level used in container handling cranes and the availability of such cranes and also how ICT systems are used to improve productivity of the quay cranes. The results of the research will help to take strategic decisions on the future procurement of cargo handling equipment. Further this will also give an indication for the replacement of old cranes with state of the art new equipment.

Most of the developed ports in the world use ICT systems in almost every segment in the cargo export and import processes and they continue to invest on further improvements. But we are still reluctant to use, and less prepared for it, although customers demand more from the seaports and the terminal operators. The results of the research show that the use of ICT systems has a big contribution to make towards the availability and productivity of quay cranes and hence customer satisfaction.

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ABBREVIATIONS

Term	Explanation
APL	American President Line
AGCP	Average Gross Crane Productivity
CFS	Container Freight Station
CS	Cargo Systems
CSC	Ceylon Shipping Corporation
CTCS	Container Terminal Control System
CTIS	Container Terminal Information System
CTMS	Container Terminal Management Systems
DOS	Disc Operating System
EDI	Electronic Data Interchange
ETD	Estimated Time of Departure
EWSR	East West Shipping Route
FR	Flat Rack
GPS	Global Positioning System
GSL	Gold Star Line
GUI	Graphical User Interface
GWT	Gross Weight Ton
ICT	Information and Communication Technology
IHI	Ihikawajima Harima Heavy Industries
ITT	Inter Terminal Trucking
JCT	Jaye Container Terminal
JICA	Japan International Cooperation Agency
JNPT	Jawaharlal Nehru Port Trust
JPC	Japan Port Consultants
LAN	Local Area Network
LTO	Land Transport Operations
LOA	Length Over All
MACH	Marine Container Handling System
MES	Mitsui Engineering & Shipbuilding

MDT	Mobile Data Terminal
MSC	Mediterranean Shipping Company
NTP	Network Time Protocol
NYK	Nippon Yusen Kaisha
PC	Personal Computer
PDS	Position Detecting System
PLC	Programmable Logic Controller
PM	Prime Mover
PSA	Port of Singapore Authority
QCT	Queen Elizabeth Container Terminal
QEQ	Queen Elizabeth Quay
RHT	Radio Handheld Terminal
RMGC	Rail Mounted Gantry crane
RTGC	Rubber Tired Gantry crane
SAGT	South Asia Gateway Terminal
SLPA	Sri Lanka Ports Authority
STS	Ship To Shore
SWL	Safe Working Load
TEU	Twenty-foot Equivalent Unit
TMS	Terminal Management System
TSA	Terminal Service Agreement
UCT	Unity Container Terminal
UAE	United Arab Emirates
UPS	Uninterruptible Power Supply
USL	United Shipping Line
YOCS	Yard Operating Computer System
YPS	Yard Planning System
ZPMC	Zhenhua Port Machinery Company